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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/051,987

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Sooyoul Hong

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EXAMINER

KINDER, DARRELL D

ART UNIT

PAPER NUMBER

2862

DATE MAILED: 03/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/051,987

Applicant(s)

HONG ET AL.

Examiner

Darrell Kinder

Art Unit

2862

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 7-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Referring to claim 7, it is unclear as to which signal is being reduced, as claim 6 specifies that the reference signal is being reduced, and claim 7 states that it is the test signal. It is indefinite as to which one is the proper signal to be reduced.

2. Claim 8 is rejected as sharing the indefiniteness of the rejected base claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. "Thermal Decay in High Density Disk Media," IEEE Transactions on Magnetics, vol. 34, no. 5 September 1998 pages 3786-3793 (Zhang), in view of U.S. Patent no. 6,483,300 (Severson).

Referring to claims 1 and 6, Zhang discloses a test stand for testing a thermal decay of a disk of a hard disk drive comprising: a spindle motor that can spin the disk

(paragraph 4); a head coupled to the disk (paragraph 4); a controller connected to said head, said controller operates in accordance with a procedure that writes a reference signal onto a reference track (paragraph 7) of the disk, and then reduces an amplitude of the reference signal (paragraph 7), writes a test signal onto the disk (paragraph 7), reads the test signal, reads the reference signal, and normalizes the signal with the reference signal (paragraph 10).

Zhang does not disclose that the test stand includes a heating element or that the method and procedure includes a step wherein the disk is heated by a heating element.

Severson discloses a spin stand which further includes a disk heater (col. 2 lines 2-3). Severson teaches that the heater is useful in accelerating aging studies on the disk by applying thermal energy to the disk (col. 2 lines 38-45).

One of ordinary skill in the art would have looked to Severson to modify Zhang as they are analogous art, concerning the testing of disks. Further more one of ordinary skill in the art would have been motivated to modify Zhang with Severson such that the test stand included a heater in order to perform aging and worst-case tests which are accelerated, as Zhang's tests take 15+ hours, and would be benefited by a shorter time span.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the stand and method of Zhang such that a heater was used to heat the disk and perform accelerated aging and worst-case tests

as it would have accelerated the testing procedure of Zhang, resulting in a more efficient test stand and method.

4. Referring to claims 2 and 7, the combination of Zhang-Severson does not disclose that the amplitude is reduced with a DC erasing current. Zhang instead reduces the amplitude by letting the disk spin for approximately 15 hours (paragraph 7).

One of ordinary skill in the art would have been motivated to use a DC erase current to reduce the amplitude of the reference signal, as a DC erase current is old and well known in the art as an amplitude reduction means, as it would have also provided a means for accelerating the time frame of the testing procedure. Using a DC erase current could significantly reduce the approximately 15 hours.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the stand and method of Zhang by reducing the amplitude with a DC erase current as it would have provided a means for significantly reducing the amount of time it takes to complete a test, resulting in a more efficient testing mechanism and procedure.

5. Referring to claims 3 and 8, the combination of Zhang-Severson does not explicitly disclose that the amplitude of the test signal is reduced to 60%-80% of peak value. However this is an arbitrary range, and it is not seen why this range is more beneficial than any other range of values that the amplitude could be reduced to. One of ordinary skill in the art could easily have modified the stand and procedure of Zhang-Severson such that the amplitude was reduced to 60-80% of peak value without undue experimentation as such a range of values may produce results that are more favorable,

or easier to analyze, or most accurately characterize the thermal and performance decay of the disk.

6. Claims 4-5 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang-Severson as applied to claims 1 and 6 above, and further in view of U.S. Patent no. 6,483,299 (Pressesky).

Referring to claims 4 and 9, the combination of Zhang-Severson, by way of the teachings of Severson, do not state that the heating portion is a laser that directs a laser beam onto a portion of the disk.

However, a laser beam is old and well known as a thermal source. Furthermore, Pressesky discloses a method and procedure for determining the magnetic properties of magnetic media wherein a thermal source is used, and said thermal source is a laser beam (col. 2 lines 42-56). Pressesky use the laser beam as the thermal source as t allows for a localized temperature change, only heating a certain portion of the disk (col. 2 lines 30-32).

One of ordinary skill in the art would have looked to Pressesky to modify the combination of Zhang-Severson as it is also analogous art: in the art of testing magnetic media (i.e. disks). Furthermore, one of ordinary skill in the art would have been motivated to modify the combination of Zhang-Severson with the teachings of Pressesky such that the thermal source is a laser, as it would have allowed the localized heating of the disk, so that only the area of the disk containing the reference and/or test tracks could be subjected to heating. This would improve the efficiency of

the test by eliminating the unnecessary heating of parts of the disk that are not important to the test.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the combination of Zhang-Severson with the teachings of Pressesky such that the heating element is a laser in order to improve the efficiency of the test.

Referring to claims 5 and 10, the combination of Zhang-Severson, by way of the thermal source of Severson, discloses a test stand and procedure wherein said head is on a first surface and the heating element, which could be a laser from the teachings of Pressesky above, is directed onto an opposite second surface of the disk (**Fig. 3** heater 200; head 144; disk 106).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Meyer et al. U.S. Patent no. 5,901,001; Bamba et al. U.S. Patent no. 6,147,488; Richter United States Patent Publication no. US 2002/0063559; Chainer et al. U.S. Patent no. 6,469,859.

Dhagat et al. "Submillisecond Spin-Stand Measurements of Thermal Decay in Magnetic Recordings," IEEE Transactions on Magnetism, Vol. 36, No. 2, March 2000, pages 528-531


Shi et al. "Spin-Stand Characterization of Thermal Decay in High Density Disk Media," IEEE Transactions on Magnetism, Vol. 36, No. 5, Sep. 2000, pages 2462-2464

Art Unit: 2862

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darrell Kinder whose telephone number is (703) 305-3303. The examiner can normally be reached on Monday-Friday 6:30-4:00, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (703) 305-4816. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


EDWARD LEFKOWITZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

dk *DK*
March 10, 2003